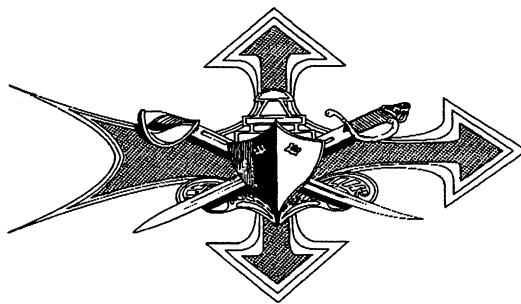


SHIPS' SAFETY BULLETIN

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Suggested routing should include CO, XO, department heads, division officers,
CMC, CPO mess, petty officers' lounge, work-center supervisors, and crew's mess.
Blanks provided for initials following review:

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Bench Grinders: Are You Playing Russian Roulette?

By GSCS(SW) John Davis,
Naval Safety Center

Will you be lucky if a grinding wheel explodes and the pieces start flying at you? Maybe, maybe not. It could depend on how much the bench grinder was used in the past. A grinding wheel should decrease in size when used properly. If it grows, you have a telltale sign that the bench grinder has been misused. Let's go over a few requirements for using this equipment:

- Post operating instructions and safety precautions tailored to the specific equipment at each piece of industrial-plant equipment. Install warning plates (in easily visible locations) when necessary to minimize possible injury.
- Equipment-hazard zones should be clearly established and marked per ships' plans and specifications; General Specifications for Ships, Section 602j; or Industrial Hygiene Survey, OpNavInst 5100.19C or OpNavInst 5100.19D.
- Ensure that the hood around grinding wheels is constructed so its periphery can be adjusted to the constantly decreasing diameter of the wheel by means of an adjustable tongue or equivalent. Maintain the distance between the wheel periphery and the tongue or end of the periphery band at approximately one-quarter inch.
- Ensure that the upper point of opening in the grinding-wheel hood facing the operator is not less than 25 degrees, not more than 65 degrees from a vertical line drawn through the spindle center.

- Make sure people's hands don't touch buffing, grinding or cut-off wheels.
 - Never operate stationary grinding wheels unless protective eye guards and hooks are in place and the tool rest is adjusted correctly.
 - Before turning on the power, check to make sure the wheel runs true, is not out of balance, and doesn't hit or rub against the housing, hood, safety shield, or tool rest. Dress wheels as necessary.
 - Never use a grinding wheel on nonferrous materials.
 - Operations that don't produce hot sparks or flame (such as spark-producing or arc-producing tools or equipment, static discharge, friction, open flames or embers, impact, and non-explosion-proof equipment, such as lights, fixtures or motors) are not considered hot work **unless** they occur in the presence of flammable liquids or in a flammable atmosphere.
- For a complete listing of the requirements, refer to OpNavInst 5100.19C and OpNavInst 5100.19D, Chapters C11, C13, D7, and D8.

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This professional flyer is approved for official distribution to the surface force and to their appropriate staffs, schools and other organizations. The information is designed to advise Department of the Navy personnel of current and emerging safety concerns to enhance their professional development and improve operational readiness.

From The Editor

This issue of Ships' Safety Bulletin (SSB) marks the start of a new mailing process to get it to our readers. The advantages of this new process include cost (it's only about 25 percent of the previous cost) and targeted distribution (we can address the envelope directly to the recipient, instead of all the copies in one envelope to the safety officer).

We addressed the envelopes based on the inputs we received in response to our request in the afloat safety digest message for October 2000, and our research on the "standard organization" for various ship classes. We also corrected addresses to align with the SSDL and adjusted the quantity mailed to each command to reflect more probable readership.

If you want to know the attention lines we used for your command, please have your safety officer send an e-mail message to me at the address listed with the POC information that follows.

Starting with the October-December 2000 issue of SSB, we are putting a print-ready copy in the "Afloat publications" area of our web site:

<http://safetycenter.navy.mil/afloat/>

We plan on putting each succeeding issue on the web at the same time we send it to the printer.

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Two Hands Are Not Always Better Than One

*By EMCS(SW) Keith Churchman,
Naval Safety Center*

When operating a switch, your free hand never shall touch a metal surface. This rule prevents you from completing a circuit in which current could flow across your chest if the switch is grounded electrically. With the adverse conditions (e.g., salt water, steel decks and perspiration) found aboard naval ships, you always have to be mindful that electrocution is possible. Here are the general guidelines for shocks you can receive from a 60-Hz system:

- At 1 milliamp, you feel a shock.
- At 10 milliamps, you may not be able to let go.
- At 100 milliamps, you may die if the shock lasts for one second or more.

Body resistance can be as low as 300 ohms and can drop even lower if the skin is broken. Let's substitute

some numbers in the formula: **I (current flow) equals E (source voltage) divided by R (resistance in ohms)**. If E equals 115 volts and R equals 300 ohms, the total current flow would be 383 milliamps, which is more than enough current to kill you.

To guard against electrical shocks, follow these precautions:

- Don't touch a conductor until you test it and are sure it's deenergized.
- Obey all warning signs; read equipment-warning labels before use.
- Don't energize any equipment that is tagged out. Clear the tag first.
- Use authorized equipment to do maintenance work.
- Close all fuse boxes, junction boxes, switch boxes, and wiring accessories.
- Never operate a switch with the other hand on a metal surface.
- Never use outlets that appear to be burnt.
- When using a metal-cased tool, make sure it's equipped with a three-conductor cord and three-pronged plug. Verify that the ground plug extends beyond the power blades of the plug.
- Wear rubber gloves when using metal-cased, portable electrical equipment. Also wear rubber gloves when using electrical portable tools in hazardous locations, such as wet decks and bilges. Wear leather gloves over rubber gloves when the work you're doing could damage the rubber gloves.

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Here's Paint in Your Eye

By GMC(SW) Bill Fisher, USN(Ret.)

A Sailor was spraying primer on the foundation of a water manifold in a main-machinery room without wearing eye protection. When the nozzle of the sprayer became clogged, he followed instructions on the can and removed the nozzle to clean it. Unfortunately, he skipped the instructions for re-installing the nozzle. Instead of gently twisting the nozzle back into place, he pushed it. Primer sprayed in his face and eye.

If this victim had followed the five simple steps of operational risk management (ORM), he could have avoided any problems. In the first step, he would have identified the eye hazard. In the second step, he would have assessed the hazard, and in the third step, he would have made a risk decision after discussing the options

(including the use of eye protection). For the fourth step (implementing controls), he would have worn eye protection and followed all the instructions on the can. In the fifth step (supervise), he would have identified and assessed the clogged nozzle as a new hazard.

Whether your foolishness only costs you a little eye irritation or the loss of vision, you'll wish afterward that you had followed the five steps of ORM. Learn to use the process in everything you do-both on and off duty.

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You Want the Truth? Ask a Multimeter

*By ETC(SW) Jeff Miller,
Naval Safety Center*

How many times have you heard a zapping sound, immediately followed by someone saying, "Ouch!" or other similar words? How many of those times did it turn out the victims got shocked, even though the equipment was tagged out or the power switch was turned off?

Such incidents occur far too often in the Navy, and, in most cases, they are preventable. Here are the most common causes:

- A breaker is labeled wrong.
- A unit is fed from multiple power sources or an uninterrupted power supply, and all but one is isolated.
- Capacitors in the circuit are not discharged before starting a job.

It doesn't matter if equipment is electrical or electronic; the same requirements apply to both. You first must ensure all the equipment is deenergized, and you do this with a known good voltage tester (a multimeter usually works here). Chapter C9 of OpNavInst 5100.19C (with change 2) and OpNavInst 5100.19D, and NSTM 300-2.4 require you to confirm circuit isolation and deenergization with a voltage tester before doing any maintenance. It only takes a minute to confirm these details, but it can save everyone a few hours in medical or a phone call to your primary next of kin, letting them know you won't ever be home again.

Through Dec. 31, 2000, commands have reported 234 electrical shocks. In many of these cases, people were hurt so bad they couldn't hide it, or a supervisor was looking over their shoulder when the incident occurred. OpNavInst 5100.19C (with change 2) and OpNavInst 5100.19D require you to report all electrical-shock mishaps.

No one is immune to electrical shock. Reported incidents to date include people in pay grades E-1 through O-4, and we're still waiting for a report from an officer who put his hand into a Gaylord-hood controller and shocked himself. Pay grades have nothing to do with electricity or electronics. Those of us who work in either field every day must follow the safety rules, or we'll wish we had. All proper PPE or standard isolation-verification practices were not used in all maintenance-oriented shock incidents reported in 2000.

If you use them together, these tools will eliminate nearly every electrical shock in the fleet:

•**A shorting probe to discharge residual DC voltage from capacitor-resistive networks after primary AC voltage has been isolated.** Look for that voltage arc that will occur when you touch the resistive network, ensuring that the voltage is dissipated to ground.

•**Electrical-safety gloves rated above the highest voltage potential present for the equipment on which you will be working.** These gloves sometimes can be cumbersome, but we know they will fit into most of the equipment we work on, and you always can wear one on your free hand (not an effective isolation method, however).

•**Electrical-grade matting, to isolate people from ground.** When the area you're working in is not matted out, you should take a piece of matting with you and stand on it until you have confirmed power isolation.

•**Safety goggles and faceshield, to protect you from slag or a fireball that could fly out of equipment while you are shorting it to ground.**

•**A voltage tester rated for voltages above the highest possible potential voltage that could be present in the circuit or piece of equipment.**

By using the practices listed in Chapters B7, C9 and D5 of OpNavInst 5100.19C (with change 2) and OpNavInst 5100.19D, Tag-Out Users Manual, and taking time to assemble and don all the required PPE, you'll greatly reduce your risk of becoming the next reported victim of electrical shock. Personal protective equipment wasn't required in several of the mishaps reported. In several cases, though, all the proper isolation practices weren't followed. It's the combination of PPE usage and isolation-verification procedures that will significantly reduce the rate of electrical shocks in the fleet.

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Sparky Sez: Read and Heed

*By EMCS(SW) Keith Churchman,
Naval Safety Center*

The number of reported-and I emphasize "re-reported"-electrical shocks by ships from Jan. 1 through Dec. 31, 2000, was 234.

The first question we should be asking is, "Why?" Here are the top 10 reasons I feel Sailors are being shocked:

10. Electrical and electronic equipment is in poor condition (e.g., damaged plugs, cords and enclosures allow water intrusion).
9. No one is supervising subordinate personnel doing the repairs.
8. Sailors are unfamiliar with the shipboard, ungrounded, electrical-distribution system. Specifically, when you touch a conductor, you get shocked.
7. There are training shortfalls. When people start to troubleshoot electrical and electronic equipment, they don't know the basic procedures for analyzing it.
6. PPE is in bad condition, or people don't use it.
5. People try to repair equipment themselves, instead of reporting the problems to the appropriate workcenters.
4. Repair personnel don't use danger tags to isolate power before starting corrective maintenance.
3. Repair personnel don't verify power is secured after danger tags have been hung. In some cases, capacitors aren't discharged, and multiple sources of power aren't isolated, despite posted warning signs.
2. Repair personnel don't follow established troubleshooting procedures as listed in technical manuals, maintenance-requirement cards, and locally developed procedures.
1. Personnel get overconfident or complacent. This problem starts with the most senior technicians and flows down the chain of command to the junior technicians doing the maintenance.

I don't have a specific solution to correct these problems, but the application of operational risk management to the daily routine in workcenters is a starting point for reducing the number of electrical shocks. You also must follow a fundamentally sound training program that emphasizes electrical safety, and procedure-oriented troubleshooting and maintenance. And, supervisors, you have to reinforce these practices. With all these factors, our ships will be safer for everyone.

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Having Fun Can Be Dangerous

*By HMC(SW/DV) Tod Keltner,
Naval Safety Center*

Six shipmates decided to go scuba diving. All of them were qualified scuba divers-some through the Navy, others through the Professional Association of Diving Instructors (PADI), the world's largest recreational-diving organization. Thirty minutes after the dive started, only four shipmates remained. The other two never were recovered.

This example shows what can happen when we mistakenly leave safety at the brow. We're always hearing, "Safety is paramount," or "Safety is No. 1." We also sit through safety brief after safety brief, followed by safety lectures and safety stand-downs. We all get tired of the constant reminders, but safety is extremely important.

Sailors aboard more than 117 Navy ships have received operational risk management (ORM) training in 2000. They have listened to our presentations and learned about some of the mishaps that shipmates are having on and off duty. We're hoping some of the training is sinking in, but we know we'll continue reading about mishaps that could have been prevented.

ORM is a mindset designed to help us think about what we're doing before we start something. It includes these simple five steps:

- Identify hazards.
- Assess the hazards (e.g., use the risk-assessment matrix.
- Discuss options about your identified hazards (e.g., ask, "What can we do to reduce the hazards?").
- Implement controls (those things we selected to mitigate the hazards).
- Supervise these controls to ensure they are in place and are effective.

Whether doing our Navy job or relaxing and having fun, ORM can help us prevent mishaps. For more information about the ORM process, refer to OpNavInst 3500.39 or check out the Naval Safety Center web site at <http://www.safetycenter.navy.mil/>.

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My NAVOSH Top 5

By Lt. Leo Murphy,
Naval Safety Center

You're lucky. Most people give you the top 10. I'm only giving you the top 5-NavOSH discrepancies, that is. These discrepancies are the ones I've found during ship-safety surveys. Each item listed below is addressed in the NavOSH Program Manual for Forces Afloat (OpNavInst 5100.19C, with change 2, and OpNavInst 5100.19D):

1. Obstructed eyewash stations (B0508b of OpNavInst 5100.19C and B0508f of OpNavInst 5100.19D). When space is limited, it's easy to store items in the immediate area of an eyewash station. Think of it this way, though. How are you going to feel if a shipmate splashes a chemical in his eyes, panics, and stumbles blindly toward an eyewash station, with his eyes burning, only to find the station inaccessible?

2. Hazmat spill-response drills not held by damage-control teams. DCAs must train and supervise ships' damage-control efforts to combat hazmat spills. Hold these drills as often as necessary, but at least every 18 months in accordance with OpNavInst 5100.19C, Article B0302c(3). In accordance with OpNavInst 5100.19D, Article B0302e(3), hazmat spill-response drills shall be conducted as often as the DCA considers necessary.

3. Improper hazmat labeling (C2302e and D1502e). When you dispense hazmat from a shipping container to another container, label the receiving container with the material name, manufacturer name and address, and the nature of the hazard (including target organ). This requirement includes grease guns.

4. Improper PPE maintenance (B1204b of OpNavInst 5100.19C and B1201 of OpNavInst 5100.19D). How many times have I inspected a well-organized respiratory-protection program, only to find a respirator hanging by its strap in the HT shop? I also often find paint-covered safety eyewear lying about in the paint locker. The easiest way to shorten the useful service life of PPE is to stow it improperly, or not provide proper preventive maintenance when no one is using it.

5. No work procedures developed for non-friable, asbestos-containing materials (B0107). An asbestos-control plan is based on the type of non-friable asbestos work that each ship is permitted to do. Examples are tile, brakes and gaskets. This type of work requires specialized operating procedures (SOPs). You can find examples of the asbestos SOPs in both the OpNavInst 5100.19C and OpNavInst 5100.19D.

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How Not To Light A Grill

By GMC(SW) Bill Fisher, USN(Ret)

An EN3 was at a friend's house for a backyard cookout. He decided to be helpful and light the gas-operated grill. He left the lid closed as he turned on the gas. A few minutes later, he opened a small access port, struck a match, and lit the grill. A fireball immediately exited through the access port. The EN3 suffered first-degree burns to his face and second-degree burns to both forearms. He also lost 12 workdays.

The operational risk management (ORM) that we teach to the fleet is a tool to be used all the time-both on and off the job. ORM is a simple process containing five steps. Step one is identifying hazards-in this case, the possibility of an explosion. In step two, you assess the hazards. I would rate this example with a probability of occurrence as "A" and a severity category of II, which results in a risk-assessment code of 2 (serious). Step three is to make risk decisions, which involves a couple of parts. One is to discuss options to minimize or eliminate the hazard. One such option in this example would have been to open the lid so the gas could escape.

Step four is to implement controls-opening the lid and reading the operating instructions would have helped in this example. In step five, you supervise the situation for any changes that would introduce new hazards requiring identification.

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Do You Know the Latest Asbestos-Con- trol Requirements?

By HMCS(SW) Richard Bulgin, USN(Ret.)

With all the recent changes to OpNavInst 5100.19C and OpNavInst 5100.19D, there is one chapter you should review carefully: Chapter B1, Asbestos Control. It has been reorganized to clarify ship's requirements and responsibilities.

One of the most important factors to remember is that Naval Sea Systems Command (NavSeaSysCom) **cannot**

definitively establish that ships are free of asbestos-containing material. Therefore, OpNavInst 5100.19D has deleted any previous guidance that may have exempted a ship from establishing and maintaining an asbestos plan.

OpNavInst 5100.19D, Article B0102, establishes that all U.S. Navy ships are required to have an asbestos-control plan, which is determined by the type of asbestos work each ship is permitted to perform. The type of control plan required is based on the type of asbestos-containing material present aboard the ship and whether the ship has a mission to provide asbestos repair and/or removal services to other afloat commands.

Also as outlined in Chapter B1 of OpNavInst 5100.19C (with change 2) and OpNavInst 5100.19D, all work that involves asbestos-containing material is divided into three protocols, each with its own specific guidance. Another important factor to note is that all ships have non-friable asbestos and, therefore, must comply with the specific requirements of the "Protocol for Ship's Force Performing Non-Friable Asbestos Maintenance."

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Surveys Show...

*By LCdr. Michael White,
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The vast majority of degraded deck equipment can be traced to missing, corroded or painted-over lubrication fittings. Commonly affected equipment includes boat-boom goosenecks, roller chocks, boat-davit running gear, probe-receiver swivel joints, and accommodation-ladder outriggers.

I recommend you use plastic lubrication-fitting caps, especially on all external equipment. A variety of these caps are available through the supply system. You need to know the size of your lubrication fittings to ensure a proper fit. If you have any questions, contact your supply-department representative.

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Putting the Coverall Confusion to Rest-Take 2

*By Lt. Tom Weston,
Naval Safety Center*

If I needed any reminders about just how many people read Ships' Safety Bulletin, I certainly got them after the January-March 2000 issue hit the street. My phone rang off the hook for days in response to the article "Putting the Coverall Confusion to Rest." Instead of answering all your questions, it seems we simply created new ones.

To answer the new questions, we've updated the information and posted it on the Naval Safety Center web site at

<http://safetycenter.navy.mil/Afloat/surface/surfacedefault.htm>.

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Where To Get Navy Forms

*By CWO2 Terry Fahringer,
Naval Safety Center*

If you're looking to buy forms, tags, log sheets, or any item with a "II" cog, you need to read this article. According to all reports, you cannot procure any forms through the supply system. If you want an item with "LF" in the NSN, you need to visit the "Navy Forms On-Line" web site.

Naval Inventory Control Point, Philadelphia, turned over management responsibility of all forms to the Defense Automated Printing Service (DAPS), Philadelphia. DAPS developed a web site (<http://forms.daps.mil/>) for ordering all Navy forms. If you want tags for fire extinguishers, leave request/authorization forms, special request/authorization chits, or any other Navy form, this web site is where you get them. It lists 3,689 different forms and identifies special instructions on each (such as if the form or tag has been superseded). It gives you the unit of issue for each item, the quantity per unit, and the cost per unit. All you do is click on a box, and the item is added to your shopping cart.

Government customers must set up an account and can elect to pay for items with a credit card or a valid fund code. Commercial customers may pay only by sending a check an address listed on the web site before their orders are processed.

While looking for tags for CO2/AFFF/or halon fire extinguishers, I found out they had been superseded. The

old tags used were NavSec 9930/1 (NSN 0101-LF-099-3005), and the new tag is NavSea 9555/1 (NSN 0116-LF-114-3100). The tag number for PKP fire extinguishers did not change from NavSec 9930/2, but the NSN changed from 0101-LF-140-1100 to 0101-LF-015-7300. The PMS requirements for fire extinguishers still list the old numbers, but they are going to be updated on the next force revision.

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New Firefighting Gear on the Way

*By Lt. Tom Weston,
Naval Safety Center*

At last, we're getting something Sailor-friendly." That's how shipmates see the new fire-protective gear (FPG), approved by the Navy Clothing and Textile Research Facility (NCTRF) and ComNav-SeaSysCom. No longer will Navy firefighters have to deal with the old firefighting ensembles (FFEs), which took a lot of time to don and slowed re-entry time into fire-filled spaces. However, the fix won't come immediately. Plans call for the new gear to replace FFEs by phased replacement.

Here are some features of the new FPG:

- It provides the best protection available from heat and steam.
- The liner snaps out for cleaning, repair, airing, or replacement.
- It's washable (the fire retardant is in the fabric, so you can wash it, using the ship's laundry).
- It has bigger and better zippers and closures (zipper/hook and pile closure in the front and longer, e.g., 18-inch, leg zippers that won't rust).
- The crotch and underarms have radial bands that allow much easier movement.
- Kevlar-reinforced knees provide longer life and easier cleaning, as well as heat and wear protection.
- Better collar overlap provides increased neck protection.
- Other improvements include over-the-thumb wristlets and larger cargo pockets, and it comes in 18 different sizes.

The FPG is available through the new DLA fire-fighting, prime-vendor program. The items carry new NSNs and are ordered directly from the distributor in

your area. Unless a special requirement exists, it also is recommended that you have on hand a maximum of five sizes: small-regular, medium-regular, large-regular, extra-large-regular, and extra-large-long. Here are the identification and stock numbers:

4210-01-468-5505	small-short
4210-01-468-5528	small-regular
4210-01-468-5539	small-long
4210-01-468-5545	medium-short
4210-01-468-5551	medium-regular
4210-01-468-5552	medium-long
4210-01-468-5562	large-short
4210-01-468-5565	large-regular
4210-01-468-5568	large-long
4210-01-468-5599	extra-large-short
4210-01-468-5671	extra-large-regular
4210-01-468-5673	extra-large-long
4210-01-468-5677	2X-large-short
4210-01-468-5679	2X-large-regular
4210-01-468-5681	2X-large-large-long
4210-01-468-5683	3X-large-short
4210-01-468-5689	3X-large-regular
4210-01-468-5691	3X-large-long

New orders will be delivered in about seven to 14 days after the order is received. The FPGs are available through these distributors:

•Safety Equipment Company (SEC)

P.O. Box 31268
Tampa, Fla. 33631-3268
Customer service: 1-800-226-4732
E-mail: militaryteam@safesec.com

•Lion Vallen Industries

1850 Dale Rd.
Buffalo, N.Y. 14225
Customer service: 1-888-848-5599
E-mail: pmctigue@vallencorp.com

NCTRF Points of Contact:

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Are You Prepared for an Emergency Towing?

*By Lt. Roddy Oliver,
Naval Safety Center*

Most ships complete a towing exercise sometime during a work-up cycle. This operation can be tricky or downright dangerous if the ship to be towed hasn't prepared and rigged for the event. Danger also always exists that the ship doing the towing will have a steering or rudder casualty.

A grounding prompts us to recommend that all ships review their towing checklist, as well as the guidance in NSTM, Chapter 582 (Mooring and Towing). Section 9 of this manual discusses safety precautions for towing in emergency conditions. If the ship to be towed has damaged rudders, the NSTM says the "rudders should be locked by using a minimum of a 4-inch angle iron from the ship's structural strong points to the rudder yoke, welded in place." This rule makes it easier for the towing ship to control the tow and assures a safer ride.

Operational risk management (ORM) gives us the tools to handle an emergency-towing situation with a rudder casualty. By identifying the hazards of collision and grounding during such an operation, we can put controls in place (welding the rudders at centerline) to reduce the risk of colliding, grounding or losing the tow. The use of ORM also will ensure the ship is rigged and prepared for the tow, which will keep crisis management to a minimum. Save the crew a big headache before, during and after a towing operation by always using ORM.

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Valve Maintenance Getting Worse

By GSCS(SW) Brad Spahnie, USN(Ret.)

That's the story of my nearly two years spent doing safety surveys in main-propulsion spaces aboard surface ships. The trend aboard fossil-fueled platforms appears to be to take care of the valves in aviation-fuel and firefighting systems but ignore the valves in other systems. Problems abound in the latter. The only exceptions to this rule are the nuclear-fuel plants. Some of the newer ships also have less-glaring discrepancies, but they're not squeaky clean.

Look around your ship, and I'm sure you'll find several of the same problems listed here:

- Missing, broken or loose valve handwheels
 - Leaking bonnets, flanges or gland packing
 - Missing, misaligned or bound remote-valve operators
 - Bent stems or broken packing-gland studs
 - Cross-threaded union couplings or missing fasteners on flanges and bonnets
 - Improperly installed check, globe and regulating valves.
- In most cases, these valves are installed backward.

It's no problem finding glaring discrepancies like these, but what about the subtle ones? For example, what do you do when the eductor-suction gauge still shows firemain pressure with all valves closed or the seawater pump becomes air bound twice a watch? An expansion tank that requires constant filling and pressurizing should prompt someone to find out why. When fluid from one drip pan backs up into another, perhaps it's time to look at those pesky swing checks.

What's the bottom line? We can't blame poor valve maintenance on manning, except for isolated periods when the workload is extremely heavy. How about funding? What's the cost of a wire brush, a little grease, or some anti-seize? How about a lack of knowledge? It doesn't take a rocket scientist to install a handwheel. I'm sure you can come up with some more excuses, but I'm equally sure I've heard them all.

The Navy has reduced planned maintenance, eliminated many outside inspections, and shifted much of the maintenance to shore-repair facilities. With all of these initiatives, you should have more time available to fine-tune the machinery plant, but I don't see that happening.

In the final analysis, you have to update your EGLs, do your PMS, do your annual piping inspections, and complete outstanding corrective-maintenance needs. If you can't, please e-mail your excuses to me at the address below. Maybe I haven't heard 'em all.

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